DESCRIPTION AMENDMENTS

Rewrite the paragraph beginning on page 1, line 4, to read as follows:

The invention relates to a globe including a contactless and magnetically suspended globe sphere ~~as it reads from the preamble of claim 1, it also relating~~ and to a method of controlling the position of a magnetically suspended globe sphere in a globe support.

Rewrite the paragraph beginning on page 1, line 24, to read as follows:

On the other hand, care must be taken that the spacing of the globe sphere from the support does not become excessive, since, in this case, the average current through the electromagnet needs to be increased which would be a waste of energy and, apart from this, as of a certain spacing the sphere is no longer suspended in the magnetic field and would thus drop out of place. Accordingly, as soon as a certain critical maximum spacing - characterized by the output signal of the magnetic field sensor falling below a certain threshold value - the electromagnet is energized. In other words, the correct spacing of the globe sphere is set by continually energizing/deenergizing the electromagnet as controlled by the output signal of the magnetic field sensor. This device and method respectively functions satisfactorily until circumstances occur in which the system starts to oscillate or resonate as occurs, for example, with oscillations of less than 5 Hz. Tests have shown that the output signal of the magnetic field sensor is of no help in such circumstances, because any greater spacing of the ~~electromagnet~~ permanent magnet of the globe sphere ~~in the~~ from the Hall effect sensor, as a rule, is compensated by a stronger resulting magnetic field of the electromagnet. Thus, globes known from prior art fail to offer adequate safety from resonant frequencies and oscillations of all kinds.

Rewrite the paragraph beginning on page 2, line 16, to read as follows:

It is thus the object of the invention to provide a globe and a method of controlling the globe sphere in a globe support which now makes it possible to effectively prevent oscillations and resonance whilst suspending the globe sphere safely in the magnetic field with ~~mininum~~ minimum energy consumption. ~~This object is achieved by a globe as it reads from claim 1 and a method as it reads from claim 7. Advantageous aspects of the invention form the subject matter of the corresponding sub-claims.~~

Rewrite the paragraph beginning on page 2, line 23, to read as follows:

The invention is based on the applicant having discovered that the magnetic field sensor, as a rule a Hall effect sensor, fails to furnish a satisfactory signal for preventing oscillations and resonance. On the other hand, the applicant has found out that oscillations of the sphere, ~~e,g, due~~ e.g. due to resonance, are manifested by a change in the ON/OFF ratio, i.e. the duty cycle of the ~~electromagnet~~ electromagnet, when these are sensed over - as compared to the resonant frequency - shorter sensing periods in the range of e.g. 1 to 100 ms, preferably in the range of 5 to 50 ms. Accordingly, the controller of the globe uses by means of the microcontroller or microprocessor the duty cycle of the electromagnet over at least one defined period of time to derive therefrom signals for correcting activation of the electromagnet.

Rewrite the paragraph beginning on page 3, line 1, to read as follows:

This gist of the invention now makes it possible, as subsequently ~~detailled~~ detailed, not only to prevent oscillations, particularly resonance, but also to set the globe sphere at an ideal spacing relative to the globe support.

Rewrite the paragraph beginning on page 3, line 10, to read as follows:

In a first embodiment of the invention for preventing resonant oscillations the duty cycle is sensed preferably over a shorter period of time of particularly 100 microseconds to 500 milliseconds, preferably 1 to 50 milliseconds and stored in a register. Subsequently the duty cycle is sensed in the next period and stored. From these at least two sensings the change in the duty cycle is computed and this change is used as the basis for outputting control or correction signals for activating the electromagnet. When e.g. the change is positive, in other words the duty cycle of subsequent periods increases, this means that the sphere is being repelled from the globe support, thus requiring the electromagnet to be activated to attract the sphere back. In this case, e.g. positive correction signals can be output, in other words the duty cycle increased over-proportionally to decelerate the sphere stronger than would actually correspond to the values as output by the Hall effect sensor. It is in this way that resonant oscillations are depleted highly effectively. When, on the other hand, a negative change in the duty cycle is sensed over at least two periods in sequence, in other words the sphere is elevated, the energized time can be reduced over-proportionally, i.e. stronger than would correspond to the corresponding output signals of the Hall effect sensor, to prevent oscillations building up in this case, too. It is, of course, just as possible in this context to monitor the change over several e.g. 5 to 50 periods or to use the second ~~derivation~~ derivative, i.e. the change in these changes of the periods in sequence as the basis for outputting the correction signal. In this case, boosting correction or control signals are output preferably then, when the second ~~derivation~~ derivative of the change in the correction signals is positive, in other words when an increase in the positive change in the duty cycle is sensed or should a positive change in the reduction of the duty cycle be sensed.

Rewrite the paragraph beginning on page 5, line 18, to read as follows:

Referring now to FIG. 1 there is illustrated a globe 10 including a globe support 12 comprising a base 14 mounting a vertically curved stand 16. Arranged at the front end of the stand 16 are an electromagnet 18, a Hall effect sensor 20 and an electrical controller 22. The electrical controller 22 may also be arranged at some other location in the globe support 12, e.g. in the base 14, for example in connection with an ON/OFF switch. Suspended levitated under the electromagnet 18 is a globe sphere 24 comprising at its upper side, facing the electromagnet 18, a permanent magnet 26. At its underside the globe sphere 24 includes a second permanent magnet 28 which is, however, simply provided to be held by a third permanent magnet 30 provided in the base 14 of the globe support 12 should the globe sphere 24 drop out of place, to prevent it from rolling away from the base 14 and possibly becoming damaged. The Hall effect sensor 20 detects when ~~a permanent~~ the permanent magnet 26 of the globe sphere 24 enters the field of the electromagnet 18. In this case the suspension control comprising the electromagnet 18, the Hall effect sensor 20 and ~~an electrical~~ the electrical controller 22 including a microprocessor or microcontroller is activated. The Hall detector permanently furnishes the electrical controller 22 with an output signal representative of the distance of the permanent magnet 26 from the electromagnet 18 ~~to the electrical controller 22~~. If the permanent magnet 26 and thus the globe sphere comes too near to the electromagnet 18, the electrical controller 22 deactivates the electromagnet 18. This results in the globe sphere dipping somewhat as long as the output signal of the Hall effect sensor 20 does not fall below a critical second threshold value, which in turn signals the electrical controller 22 that the electromagnet 18 needs to be re-energized. This results in the globe sphere being reattracted upwards until it reattains the region of the first threshold value at which in turn the electromagnet 18 is again deenergized. Energizing and

deenergizing the electromagnet is done at a frequency of several kilohertz e.g. 5 to 10 kHz. Should, for instance, the globe sphere start to oscillate vertically in the course of it entering into the activity range of the device or e.g. due to the wind or some other cause, the duty cycle changes in the scope of an oscillation period t1 of, for example, approximately 100 milliseconds, as evident from FIG. 2. In FIG. 2 the duty cycle is plotted as a function of time. Resonant oscillation of the globe sphere results in the duty cycle of the electromagnet becoming sinusoidal.

Rewrite the paragraph beginning on page 6, line 15, to read as follows:

This curve is obtained as follows: for a certain short period of time, for instance approximately 5 to 15 milliseconds, corresponding to the spacing of the two crosses in the graph as shown in FIG. 2, the energized/deenergized states during each sensing cycle of the microprocessor are totalled in a register or in separate registers. When the microprocessor senses the energized/deenergized status of the electromagnet once every 25 ~~milliseconds~~ microseconds, for example, then 40 sensings are made in 10 milliseconds. In these 40 sensings each energized status and each deenergized status, for example, can be counted in separate registers and subsequently the duty cycle thereof obtained or the energized status and deenergized status are totalized in a register, resulting ultimately in a negative or positive value providing information as to the duty cycle. In the course of such an oscillation, as shown in FIG. 2, the duty cycle established as described above changes. It is this change in the duty ~~cycle~~ cycle R or even the second ~~derivation~~ derivative, i.e. an increase or decrease in the change of the duty ~~cycle~~ cycle, that can be used as the basis for outputting a correcting value. By making use of these changes in time or second ~~derivations~~ derivative in conventional control programs, the oscillations can be counteracted, e.g. by counteractingly changing the duty cycle

towards the end of the oscillations, i.e., as evident from FIG. 2, in the upper and lower reversals of the curve whose ranges of oscillation also correspond to the bobbing of the sphere itself. Thus, by utilizing the highly informative duty cycle of the electromagnet the build-up of oscillations can be effectively prevented by a conventional controller and control algorithms.